

REMARKS

Claims 272-308 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is anticipated that this rejection should be moot in view of the present amendments.

The objection to “contained in” in referring to the recited T1R sequences is moot as the current claims recite “in” as suggested by the Examiner. herein.

Claim 286 is clear as it is intended to allow for the cell membrane to express T1R1 or to be attached thereto.

The objection to claim 285 which refers to a cell has been amended to make clear that the binding assay uses a cell that expresses a taste receptor comprising a T1R1 polypeptide or a cell that can either stably or transiently express the T1R1 polypeptide.

Based on the foregoing withdrawal of the 112 second paragraph rejection of claims 272-308 is respectfully requested.

Claims 272-338 were also rejected under 35 USC 112 first paragraph as allegedly being non-enabled. This rejection is respectfully traversed to the extent it may be applicable to the current claims.

The basis was that the as-filed application allegedly does not enable binding assays using the T1R1 polypeptide alone. This rejection should also be vacated. The claims under consideration are directed to binding assays that use a taste receptor comprising the novel T1R1 sequence in SEQ ID NO:17 and variants that possess at least 90% sequence identity therewith

and sequences which hybridize to the coding sequence and specifically bind a ligand bound by the T1R1 polypeptide in SEQ ID NO:17.

The position of the Examiner is that the claims are not enabled or described because assays for T1R1 alone are allegedly not enabled and that it would require undue experimentation based on the application to know what ligands that T1R1 binds. Specific reference is made to the Hoon et al reference. This is respectfully traversed.

First, it is noted that the claims use open claim phraseology and therefore embrace assays wherein T1R1 is expressed by itself or in association with another T1R member. In this regard the specification specifically teaches that T1R1 and T1R3 may be co-expressed to produce a functional taste receptor. Also, the specification indicates that T1R1 may comprise a umami taste receptor.

Based thereon, one skilled in the art would be able to practice the pending claims absent undue experimentation and would be placed in constructive possession of the claimed invention since one skilled in the art would understand from the express teachings of the disclosure that the subject T1R1 polypeptide is a human taste receptor containing binding residues that will be anticipated to specifically bind to taste ligands specific thereto alone or in association with T1R3. In addition, the screening of the receptor against umami taste ligands would further be suggested and enabled by the as-filed specification since the application suggests that the subject T1Rs may be involved in umami taste.. In fact 2 (T1R1 and T1R) of the only three existing T1Rs are involved in umami taste.. While it is acknowledged that the teachings are prophetic it is respectfully submitted that the teachings of this application would inevitably enable and place a skilled artisan in possession of the claimed binding assays.

In addition, while it is acknowledged that the claims embrace binding assays wherein T1R1 is used by itself to screen for compounds that putatively affect T1R1 taste, this also is believed to be both enabled and described by the teachings of the application. With respect thereto, the as-filed application teaches binding and functional assays that have been used to identify ligands that bind specifically to taste receptors comprising a T1R1 polypeptide as claimed. It is now well known that taste receptors comprising the subject T1R1 polypeptide bind to sweet amino acids and other umami tastants and is involved in the response to such tastants.

It is additionally noted that subsequent to the filing of this application that the present Assignee and others have reduced to practice and identified the portion of T1R1 containing the ligand binding residues i.e., those that are involved in ligand recognition. More specifically, and related to the foregoing, functional and binding assays have been reduced to practice using chimeric taste receptors comprising the transmembrane containing binding regions of T1R1 and other T1R chimeras that retain the transmembrane containing binding region of a particular T1R such as T1R1 or T1R2 or T1R3 and the extracellular region of a different G protein coupled receptor. (See e.g., published Senomyx patent application US20070161053; Xu et al., PNAS 101(39):14258-14263 (Sept. 2004); and Cui et al., Curr Pharm. Des. 12(35):4591-4600 (2006)). This further supports the view that the subject claims could and have been practiced by those skilled in the art using methods such as are claimed herein

In addition, with respect to the binding functionality of a T1R by itself such as T1R1 it has been reported in at least 2 references that T1R3 knockout animals retain the ability to recognize both sweet and umami tastants. (See, e.g., Delay et al, Chem Senses 31(4):351-7 (206); and Damak et al., Science 301(5634):850-3 (2003)) These references are believed to

provide convincing in vivo data substantiating the functionality of the sweet receptor and/or the umami taste receptors in the absence of T1R3. The fact that these animals recognize both sweet and umami tastants suggests that the other T1R members such as T1R1 and T1R2 are functional and retain their ligand binding properties in the absence of T1R3 as encompassed by the present claims.

In addition, it is again noted as appreciated by the Examiner that this application explicitly discloses that the subject T1Rs including T1R1 may be co-expressed with another T1R member such as T1R3. Therefore, the as-filed application further enables assays that use T1R1 alone or in association with another GPCR such as T1R3.

Based on the foregoing, it is submitted that the claims are enabled and described. Withdrawal of the 112 enablement rejection is respectfully requested since (i) the as-filed specification enables assays using taste receptors that comprise a T1R1 taste receptor polypeptide as currently claimed and/or (ii) since it has been established in T1R3 knockouts that the response to both umami and sweet ligands is retained and therefore that the recognition thereof (functionality) does not require the presence of T1R3. This would support a conclusion that a functional umami or sweet taste receptor does not require the formation of heteromeric taste receptors comprising T1R3.

Moreover, as noted previously, this application teaches the role of T1R1 alone and in association with other T1R members in taste transduction and that this receptor contains binding residues that specifically responds to taste ligands. Therefore it would be apparent to one skilled in the art that a T1R1 variant which falls within the genus of potential T1R1 polypeptides may be used in binding assays as claimed herein. It is reasonable to conclude based on the foregoing

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that ligand binding would be retained in the presence or absence of T1R3. Based thereon withdrawal of the 112 enablement and written description rejection is believed to be in order.

The Office Action also indicates that claims 235-271 stand rejected under double patenting grounds based on commonly assigned US Serial No. 10/724,223. This rejection is again respectfully requested to be held in abeyance until this application is otherwise in condition for allowance.

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It is anticipated that the present amendments and remarks should place the case in condition for allowance.

Based on the foregoing, a Notice to that effect is respectfully solicited. Reconsideration and allowance of all claims are respectfully requested. If any issues remain after consideration of this Amendment, Examiner Brannock is respectfully requested to contact the undersigned by telephone (202-419-2018) so that these issues can be resolved by Examiner's Amendment or a Supplemental Response.

Applicants believe that no fee is due with the filing of this Amendment. However, in the event that the calculations of the Office differ, Commissioner is hereby authorized to charge or credit any such variance or credit any overpayment to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

HUNTON & WILLIAMS LLP

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By:



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